US009236684B2

(12) **United States Patent**
Lin

(10) **Patent No.: US 9,236,684 B2**
(45) **Date of Patent: Jan. 12, 2016**

(54) **CABLE INTERFACE CONNECTION STRUCTURE**

(71) Applicant: **CyberTAN Technology, Inc.**, Hsinchu (TW)

(72) Inventor: **Yueh-Feng Lin**, Hsinchu (TW)

(73) Assignee: **CyberTAN Technology, Inc.**, Hsinchu (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 27 days.

(21) Appl. No.: **14/185,152**

(22) Filed: **Feb. 20, 2014**

(65) **Prior Publication Data**

US 2015/0194775 A1 Jul. 9, 2015

(30) **Foreign Application Priority Data**

Jan. 9, 2014 (TW) ..... 103100756 A

(51) **Int. Cl.**

H01R 13/627	(2006.01)
H01R 24/64	(2011.01)
H01R 12/70	(2011.01)
H01R 12/72	(2011.01)
H01R 31/00	(2006.01)

(52) **U.S. Cl.**

CPC ***H01R 13/6273*** (2013.01); ***H01R 24/64*** (2013.01); *H01R 12/7023* (2013.01); *H01R 12/724* (2013.01); *H01R 31/005* (2013.01)

(58) **Field of Classification Search**

CPC H01R 23/025; H01R 23/7073; H01R 23/005; H01R 23/02

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,963,300	A *	6/1976	Patton et al.	439/638
4,368,942	A *	1/1983	Mathe et al.	439/676
6,544,706	B1 *	4/2003	Takasaki	430/110.2
6,585,540	B2 *	7/2003	Gutierrez et al.	439/620.19
6,592,397	B2 *	7/2003	Pocrass	439/418
6,796,844	B1 *	9/2004	Edwards, III	439/638
2010/0267282	A1 *	10/2010	Tsai	439/607.17
2013/0130549	A1 *	5/2013	Wu et al.	439/607.01
2013/0149913	A1 *	6/2013	Sun et al.	439/676
2015/0064979	A1 *	3/2015	Yang	439/676

FOREIGN PATENT DOCUMENTS

CN	202050073	11/2011

* cited by examiner

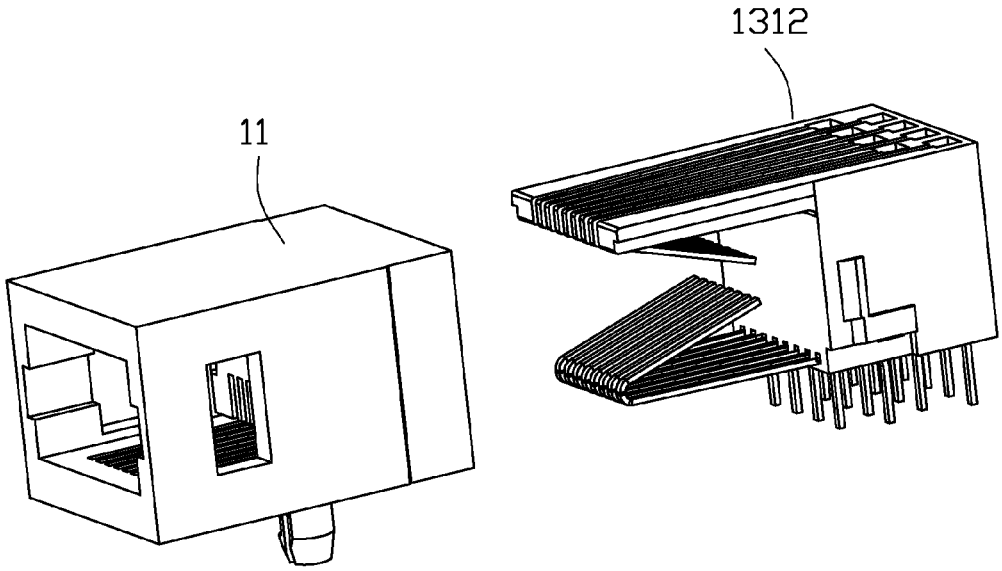
Primary Examiner — Gary Paumen

(74) *Attorney, Agent, or Firm* — Novak Druce Connolly Bove + Quigg LLP

(57) **ABSTRACT**

A cable interface connection structure includes a jack and a plug. The plug is received in the jack. The jack includes a case, a support body, and a plurality of pins. The pins are received in the support body, and the support body is received in the case. The jack defines two rows of the pins. The plurality of pins in each row is the same. The plug includes two rows of contact terminals. A plurality of contact terminals in each row is the same. The pins are coupled to the contact terminals.

10 Claims, 12 Drawing Sheets



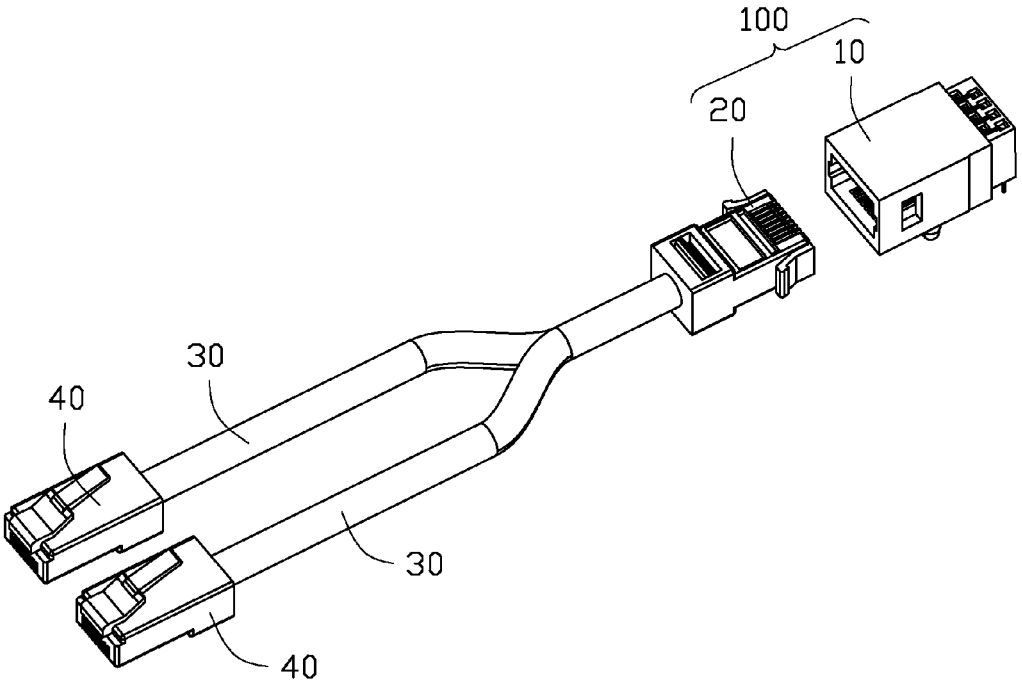


FIG. 1

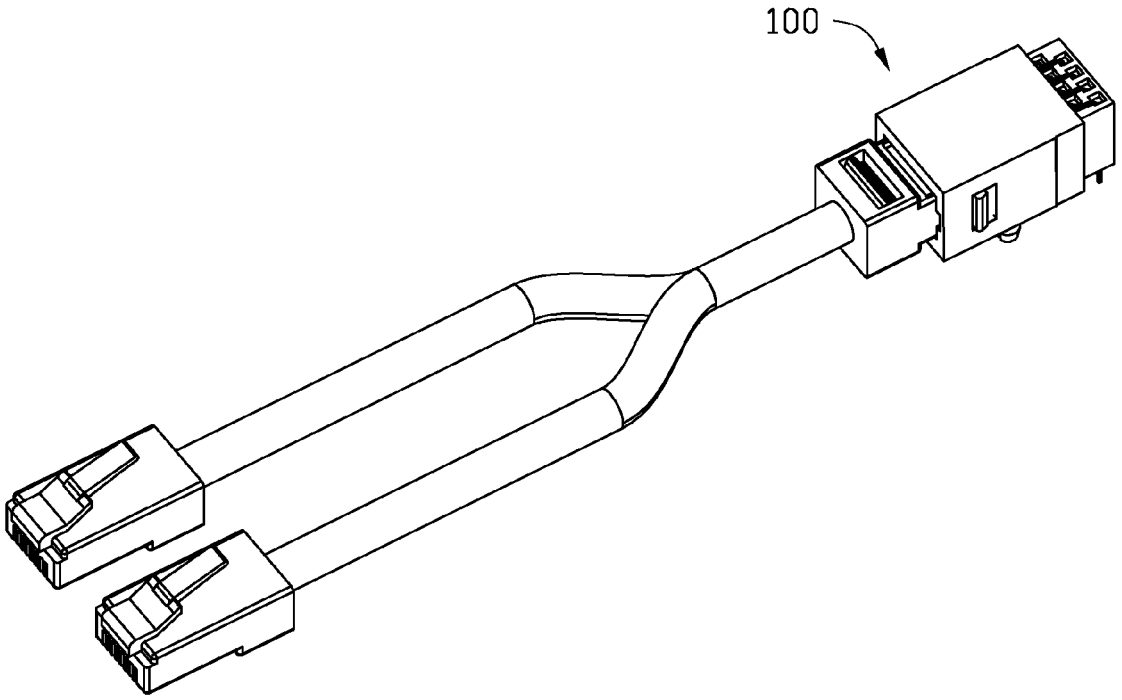


FIG. 2

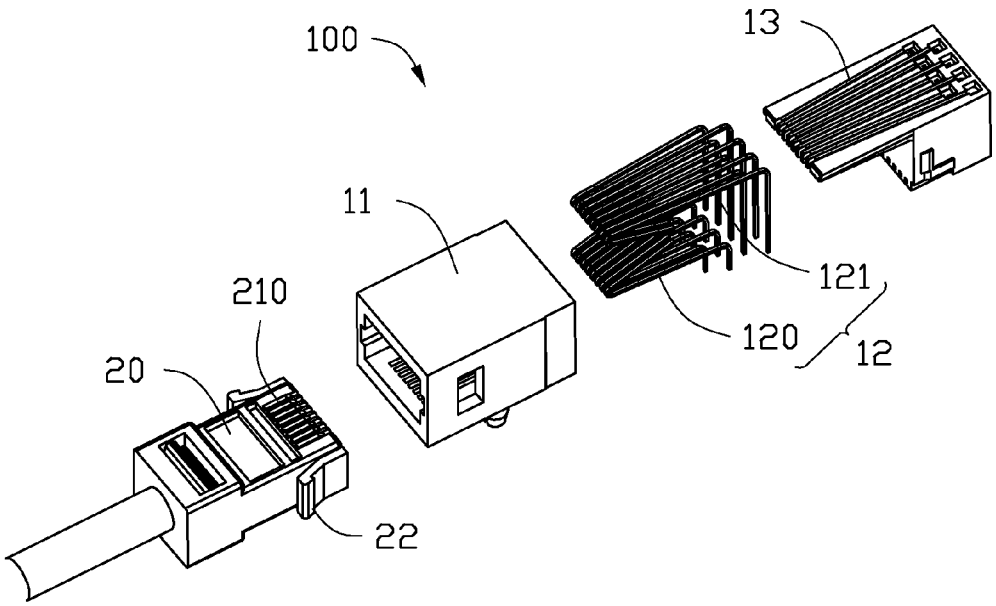


FIG. 3

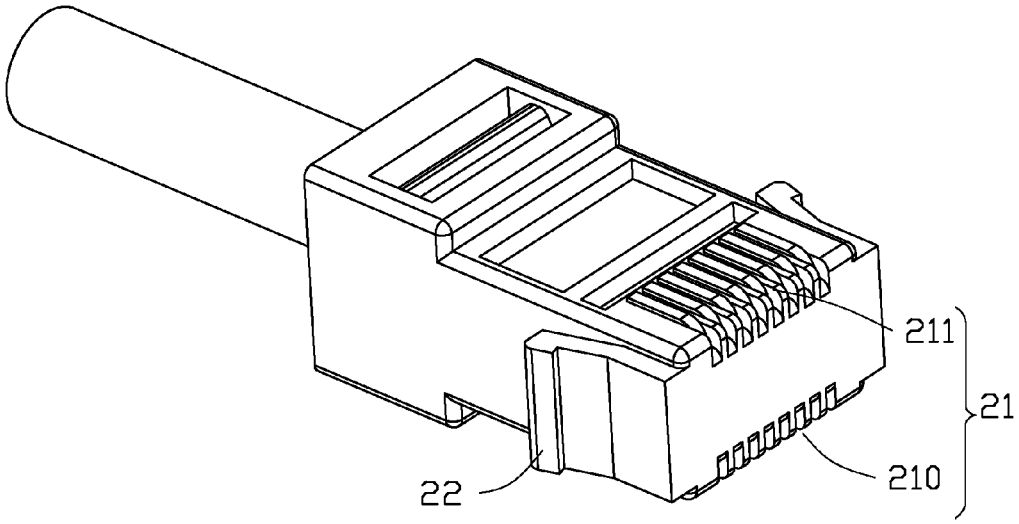


FIG. 4

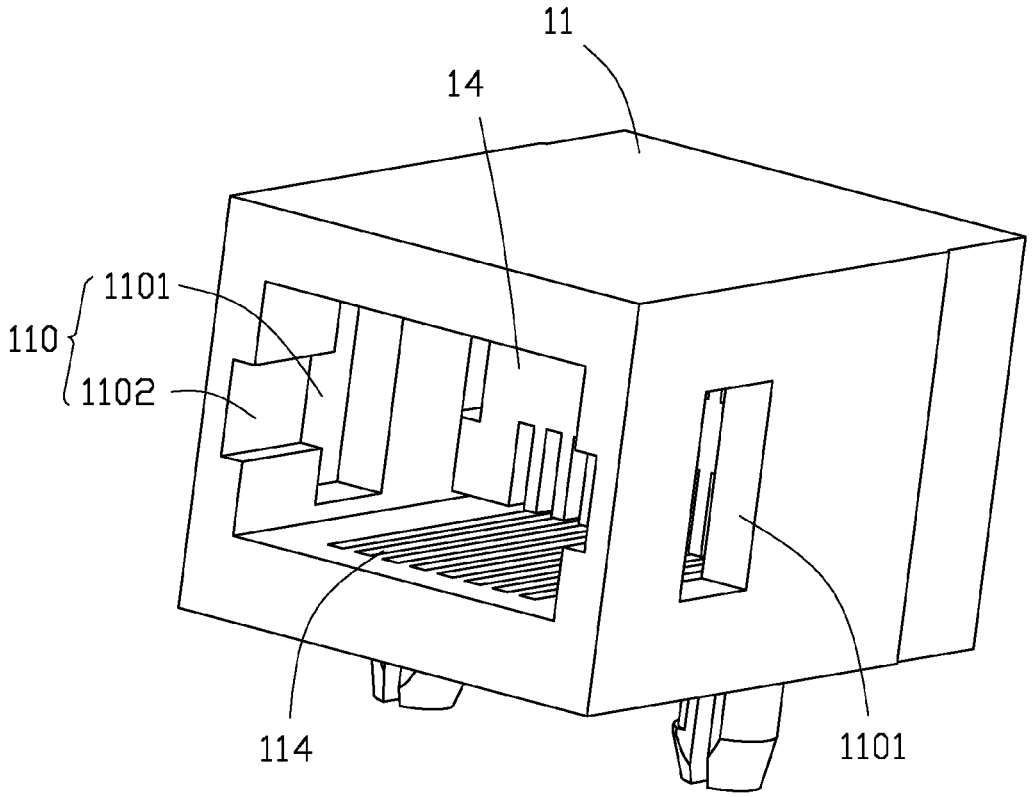


FIG. 5

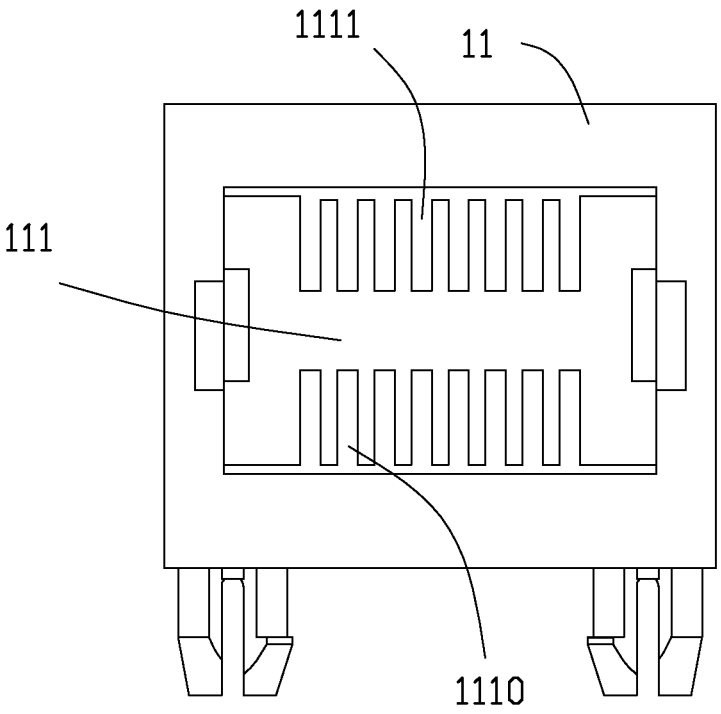


FIG. 6

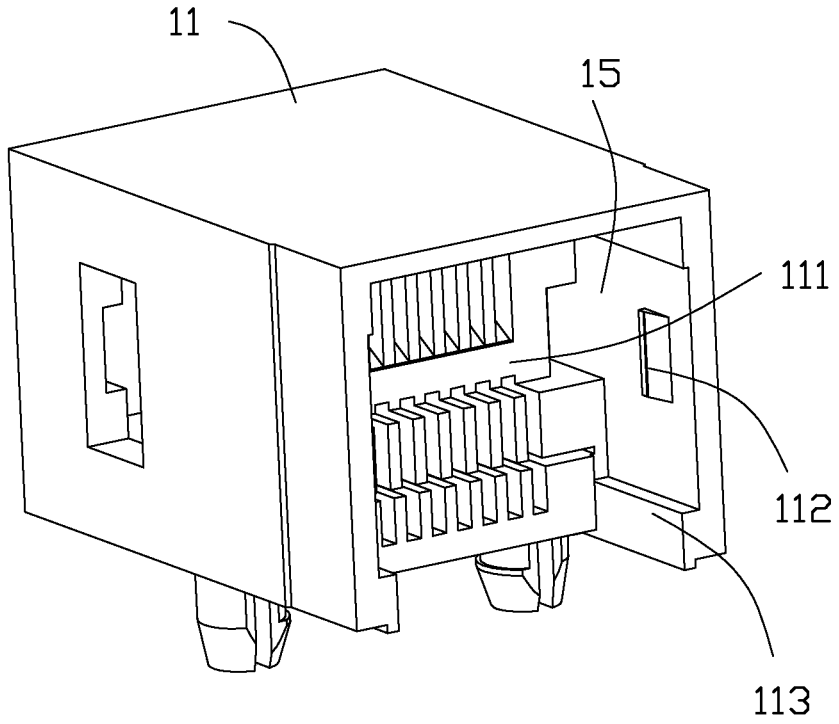


FIG. 7

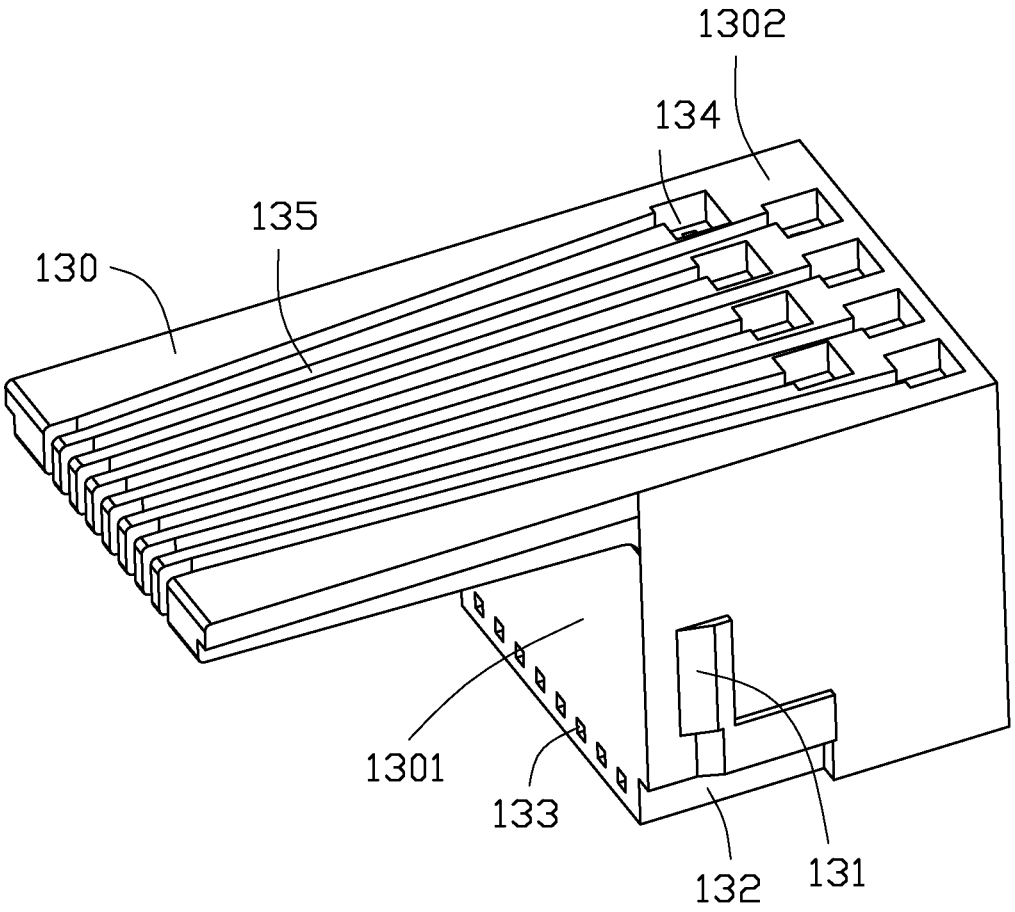


FIG. 8

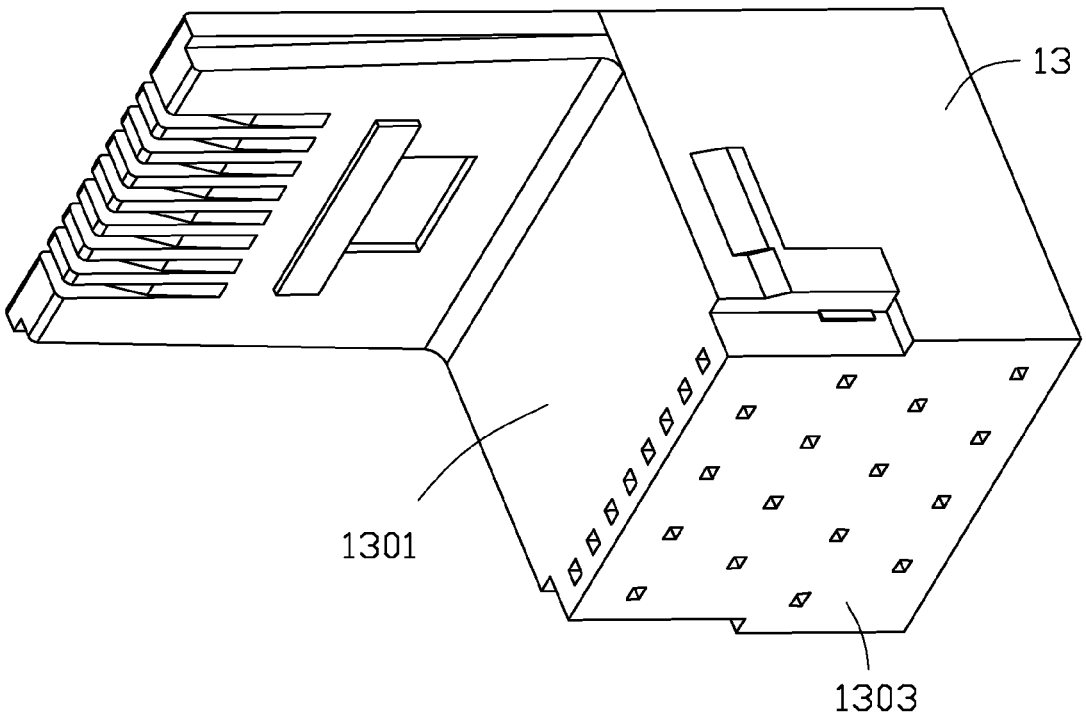


FIG. 9

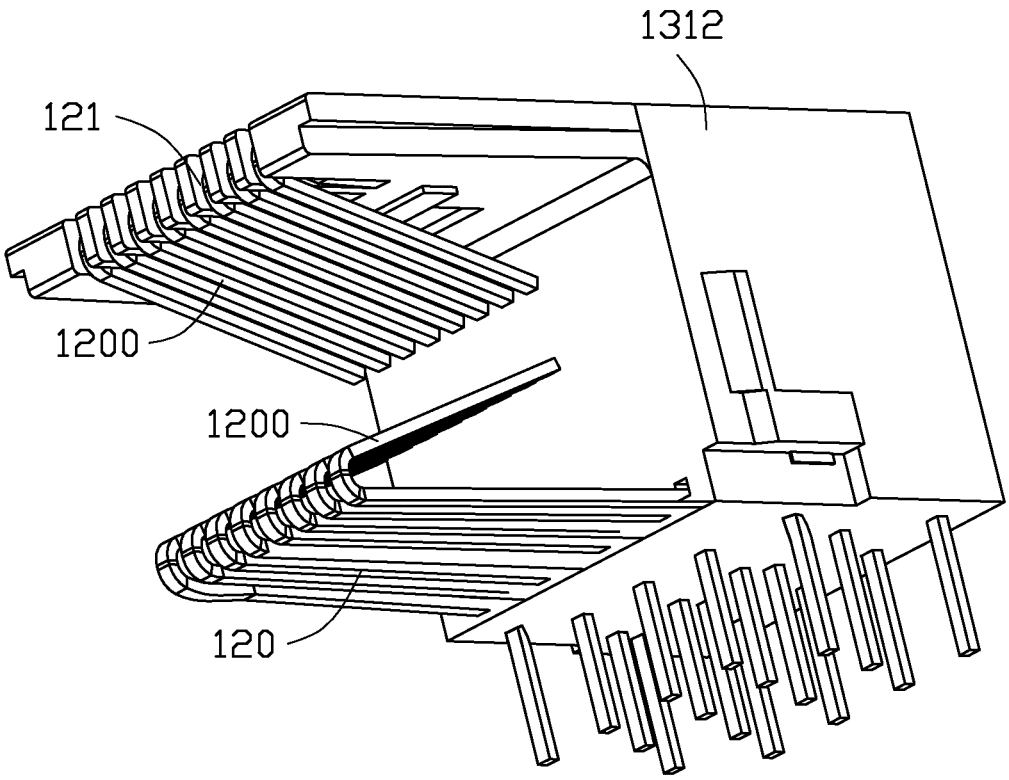


FIG. 10

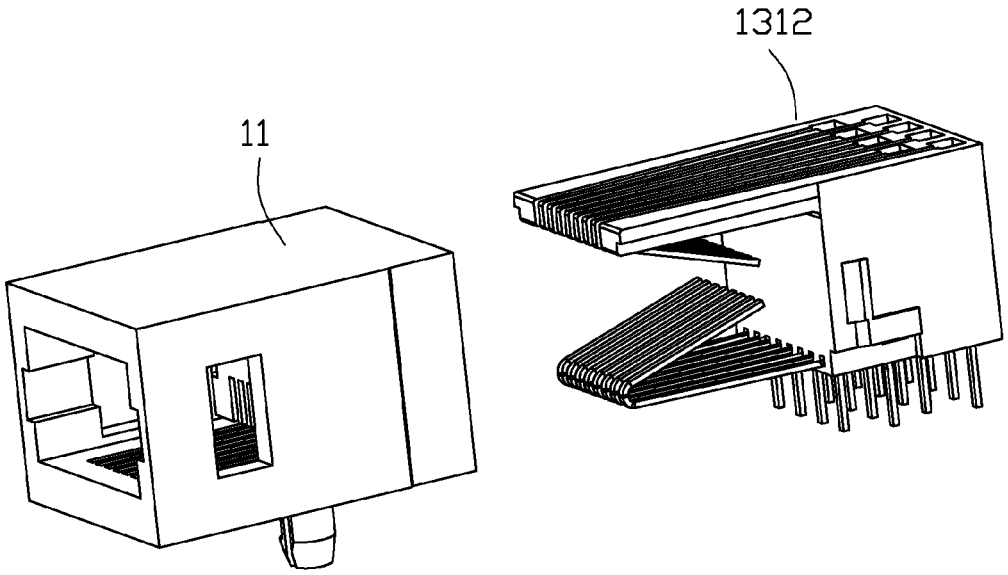


FIG. 11

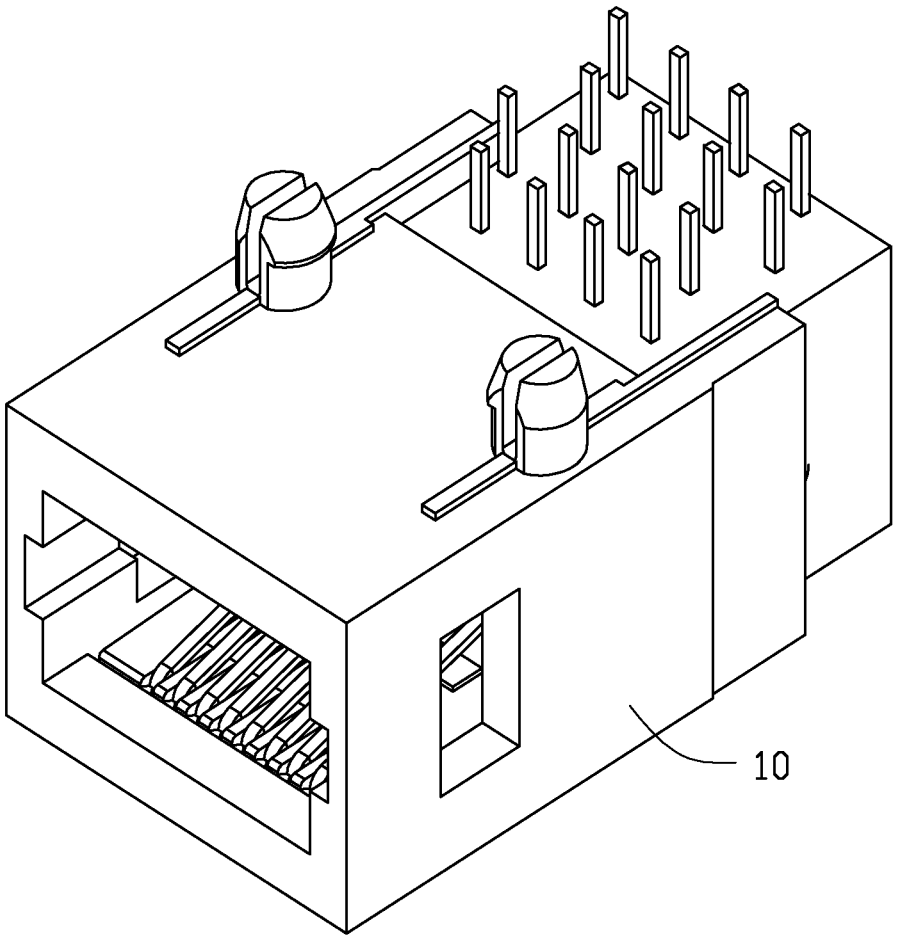


FIG. 12

CABLE INTERFACE CONNECTION STRUCTURE

BACKGROUND

1. Technical Field

The present disclosure relates to a communication interface connection structure, and more particularly to a cable interface connection structure.

2. Description of Related Art RJ45 ports are commonly used for data transmission in network interfaces. One RJ45 port connects to one cable. Thus, two or more RJ45 ports are required to connect to two or more cables. However, space of the network interfaces may be too limited to add more RJ45 ports.

BRIEF DESCRIPTION OF THE DRAWINGS

Many aspects of the present embodiments can be better understood with reference to the following drawings. The components in the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the present embodiments. Moreover, in the drawings, all the views are schematic, and like reference numerals designate corresponding parts throughout the several views.

FIG. **1** is an isometric view of an embodiment of a cable interface connection structure.

FIG. **2** is an isometric view of a plug received in a jack of the cable interface connection structure of FIG. **1**.

FIG. **3** is an exploded, isometric view of the cable interface connection structure of FIG. **1**.

FIG. **4** is an isometric view of the plug of FIG. **2**.

FIG. **5** is an isometric view of a case of the jack of FIG. **2**.

FIG. **6** is a front view of the case of FIG. **5**.

FIG. **7** is another isometric view of the case of FIG. **5**.

FIG. **8** is an isometric view of a support body of the jack of FIG. **2**.

FIG. **9** is another isometric view of the support body of FIG. **8**.

FIG. **10** is an isometric view of pins assembled to the support body of FIG. **8**.

FIG. **11** is an isometric view of the case and the support body with the pins of FIG. **8**.

FIG. **12** is an isometric view of the jack of FIG. **2**.

DETAILED DESCRIPTION

The disclosure is illustrated by way of example and not by way of limitation in the figures of the accompanying drawings in which like reference numerals indicate the same or similar elements. It should be noted that references to "an" or "one" embodiment in this disclosure are not necessarily to the same embodiment, and such references can mean "at least one."

FIGS. **1** and **2** show that a cable interface connection structure **100** includes a jack **10** and a plug **20**. The plug **20** is inserted into the jack **10**. In the embodiment, the plug **20** connects to two cables **30**. An end portion of each cable **30** connects to a crystal head connector **40**.

FIGS. **3** and **4** show that the plug **20** includes a contact head **21** and two elastic hooks **22**. The contact head **21** defines a first contact terminal group **210** and a second contact terminal group **211**. The first contact terminal group **210** and the second contact terminal group **211** each include eight contact terminals. The two elastic hooks **22** are located at two sides of the contact head **21**.

The jack **10** includes a case **11**, a plurality of pins **12** and a support body **13**. The plurality of pins **12** and the support body **13** are received in the case **11**.

FIGS. **5** through **7** show that the case **11** defines two connecting spaces **110**, and includes a slot board **111**, a plurality of first hooks **112**, and flanges **113**. The two connecting spaces **110** are defined in two opposite sides of the case **11**. The connection space **110** is divided into a square hole **1101** and a groove **1102** communicating with the square hole **1101**. The slot board **111** is received in the case **11** and drives an inner space of the case **11** into a first space **14** and a second space **15**. A second groove group **114** communicating with the first space **14** is defined in the case **11**. The slot board **111** includes a first slot group **1110** and a second slot group **1111**. The plurality of first hooks **112** and the flanges **113** are located at two sides of the case **11**.

FIGS. **8** and **9** show that the support body **13** includes a plurality of second hooks **131** and defines two support grooves **132**, eight first holes **133**, eight second holes **134**, a first groove group **135**. The second hook **131** engages with the first hook **112**, and the flanges **113** are located on the support grooves **132**, to securely receive the support body **13** in the second space **15** of the case **11**.

The support body **13** further includes a first surface **1301**, a second surface **1302**, a third surface **1303**, and a block **130**. The first groove group **135** is defined in the second surface **1302**. The block **130** is substantially coplanar with the second surface **1302** and extends from the first surface **1301**. The eight first holes **133** are defined in the first surface **1301** and adjacent to the third surface **1303**. The eight second holes **134** are defined at one end of the first groove group **135**. Each of the eight first holes **133** and each of the eight second holes **134** communicate with respective holes defined in the third surface **1303**.

FIGS. **10** through **12** show that the plurality of pins **12** are divided into a first pin group **120** and a second pin group **121**. The first pin group **120** and the second pin group **121** each include eight pins. Each of the plurality of pins **12** includes an elastic contact head **1200**. The first pin group **120** extends through the corresponding eight first holes **133** and the eight holes defined on the third surface **1303**. The second pin group **1221** is received in the first groove group **135**, and extends through the eight corresponding second holes **134** and the eight corresponding holes defined in the third surface **1303**.

In assembly of the cable interface connection structure **100**, the pins **12** and the support body **13** are received in the second space **15** of the case **11**. Then, the first group **120** is received in the first slot group **1110**, and further received in the first space **14** and the second groove group **114**. The second pin group **121** is received in the second slot group **1111**, and further received in the second space **15**. The first hooks **112** engage with the second hooks **131**.

The plug **20** is received in the first space **14**. The elastic hooks **22** engage with the connecting spaces **110** when the plug **20** is completely received in the first space **14**, thus fixing the plug **20** in the first space **14**. The first pin group **120** is coupled to the first contact terminal group **210**, and the second pin group **121** is coupled to the second contact terminal group **211**.

In the embodiment, the first contact terminal group **210** corresponds to one cable **30**, and the second contact terminal group **211** corresponds to the other cable **30**. Thus only one jack is needed for the two cables **30**.

Although the features and elements of the present disclosure are described as embodiments in particular combinations, each feature or element can be used alone or in other various combinations within the principles of the present

disclosure to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A cable interface connection structure, comprising:

a jack comprising a case, a support body and a plurality of pins, the pins being received in the support body, the support body being received in the case; and

a plug received in the jack, the plug comprising a plurality of contact terminals;

wherein the jack comprises two rows of the pins, the plurality of pins in each row is the same, the plug comprises two rows of the contact terminals, the plurality of contact terminals in each row is the same, and the pins are coupled to the contact terminals;

wherein the case comprises a slot board driving an inner space of the case into a first space and a second space, the plug is received in the first space and the support body is received in the second space.

2. The cable interface connection structure of claim **1**, wherein the plug comprises a contact head and two elastic hooks located at two sides of the contact head, wherein the case comprises two connection spaces, the two hooks engage with the two connection spaces.

3. The cable interface connection structure of claim **2**, wherein the connecting space is divided into a square hole and a groove communicating with the square hole.

4. The cable interface connection structure of claim **1**, wherein the two rows pins comprise a first pin group and a second pin group, and the two rows contact terminals comprise a first contact terminal group coupled to the first pin group, a second contact terminal group coupled to the second pin group.

5. The cable interface connection structure of claim **4**, wherein the first pin group and the second pin group each comprise eight pins, and the first contact terminal group and the second contact terminal group each comprise eight contact terminals.

6. The cable interface connection structure of claim **1**, wherein the support body comprises eight first holes defined in a first surface, eight second holes defined in a second surface and a first groove group, wherein each of the eight first holes and each of the eight second holes communicate with respective holes defined in a third surface.

7. The cable interface connection structure of claim **6**, wherein the first groove group is defined in the second surface and a block substantially coplanar with the second surface and extended from the first surface, the pins of the first pin group extending through the eight first holes defined in the first surface, the pins of the second pin group extending through the eight second holes defined in the second surface.

8. The cable interface connection structure of claim **1**, wherein the slot board comprises a first slot group and a second slot group, the pins of the first pin group received in the first slot, the pins of the second pin group received in the second slot group.

9. The cable interface connection structure of claim **1**, wherein the first space comprises a groove group communicating with the first space is defined in the case.

10. The cable interface connection structure of claim **1**, wherein the case further comprises a first hook and a flange, and the support body further comprises a second hook and a support groove, the first hook engaging with the second hook, the flange being received in the supporting groove to securely retain the support body in the case.

* * * * *